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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,500	10/16/2001	Patrick P. Naulleau	015780-042	6932
7590 05/11/2004 Fliesler, Dubb, Meyer, & Lovejoy,LLP Four Embarcadero Center Fourth Floor San Francisco, CA 94111			EXAMINER LAVARIAS, ARNEL C	
			ART UNIT 2872	PAPER NUMBER

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/981,500 AK	Applicant(s) NAULLEAU, PATRICK P.	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 01 March 2004 and 05 January 2004.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-9, 11-13 and 15-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-9, 11-13 and 15-20 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/5/04 has been entered.

Response to Amendment

2. The amendments to Claims 1 and 11 in the submission dated 1/5/04 are acknowledged and accepted.
3. The cancellation of Claims 10 and 14 in the submission dated 1/5/04 is acknowledged and accepted.

Response to Arguments

4. The Applicant's arguments with respect to newly amended Claims 1 and 11 have been considered but are moot in view of the new ground(s) of rejection.
5. Claims 1-9, 11-13, 15-20 are rejected as follows.

Claim Objections

6. Claims 1-9, 18 are objected to because of the following informalities:

Claim 1 recites the limitation "the desired coherence" in line 5. There is insufficient antecedent basis for this limitation in the claim. Claims 2-9 are dependent on Claim 1, and hence inherit the deficiencies of Claim 1.

Claim 1, line 4- 'as' should read 'has'

Claim 2, line 1- after 'wherein the coherent, 'of' should read 'or'

Claim 7, line 1; Claim 18, line 1- 'quantize' should read 'quantized'.

Appropriate correction is required.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1-6, 11-13, 15-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-29 of copending Application No. US2003/0227657 A1. Although the conflicting claims are

not identical, they are not patentably distinct from each other because Application No. US2003/0227657 A1 similarly discloses an illuminator device for an optical imaging processing system and a method of modifying the coherence of a beam of radiation from a source (See Claims 1, 13, 14, 18, 19), wherein the imaging processing system comprises an optical system requiring partially coherent illumination, and where the illuminator comprises a source of coherent or partially coherent radiation, such as a synchrotron, which has an intrinsic coherence that is higher than a desired coherence (See Claims 1, 14); a single holographic diffuser element having a surface that receives incident radiation from the source (See Claim 1, 18); means for translating the surface of the holographic diffuser linearly in two dimensions along a plane that is parallel to the surface of the holographic element with the proviso that the surface of the holographic diffuser is not rotated (See Claims 1, 14, 17, 18), wherein the rate of the motion is fast relative to integration time of the image processing system (See Claims 1, 14); and a condenser optic that re-images the surface of the holographic element to the entrance plane of the image processing system (See Claim 1). Additionally, Application No. US2003/0227657 A1 discloses the coherent or partially coherent radiation being diffracted by the surface of the holographic element to generate diffracted radiation containing diffracted orders of radiation and a zero order of radiation and the illuminator further comprising filtering means to block all but the +1 or the -1 order radiation from reaching the condenser optic (See Claims 1-2); the holographic diffuser being a binary phase, amplitude, or a blazed phase device (See Claims 1, 3-4, 11, 18, 23).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shalapenok et al. (U.S. Patent No. 6081381), of record, in view of Jansson et al. (U.S. Patent No. 5365354) and Stanton (U.S. Patent No. 5684566).

Shalapenok et al. discloses an illuminator device for an optical imaging processing system and a method of modifying the coherence of a beam of radiation from a source (See Figure 1), wherein the imaging processing system comprises an optical system requiring partially coherent illumination, and where the illuminator comprises a source of coherent or partially coherent radiation, such as a synchrotron, which has an intrinsic coherence that is higher than a desired coherence (See 10 in Figure 1; col. 4, lines 23-30; col. 9, lines 35-39); a single diffuser element having a surface that receives incident radiation from the source (See 14 in Figure 1); means for translating the surface of the diffuser in at least one dimension along a plane that is parallel to the surface of the diffuser wherein the rate of the motion is fast relative to integration time of the image processing system (See 14 in Figure 1; 114 in Figure 3; col. 7, lines 23-27, 63-67; col. 9,

lines 32-34); and a condenser optic that re-images the surface of the holographic element to the entrance plane of the image processing system (See 20 in Figure 1). Shalapenok et al lacks the diffuser being a holographic diffuser and the means for translating the surface of the diffuser doing so linearly in two dimensions with the proviso that the surface of the diffuser is not rotated. However, optical diffuser elements based on volume holographic materials are well known in the art. For example, Jannson et al. teaches a diffuser based on volume holographic media (See for example Figure 23; Abstract; col. 16, line 37-col. 20, line 64) which may be used as part of an optical system to regulate the incident light spatial coherence by rotating or moving the diffuser in the incident light beam (See in particular col. 18, line 62-col. 20, line 64). The combined teachings of Shalapenok et al. and Jannson et al. lacks the means for translating the surface of the diffuser doing so linearly in two dimensions with the proviso that the surface of the diffuser is not rotated. However, Stanton teaches photolithography illumination system (See Figure 1) utilizing a diffuser (See 22 in Figure 1), wherein the diffuser is moved linearly in two directions in the plane parallel to the surface of the diffuser (See col. 10, line 58-col. 11, line 53) to adjust the coherence of the incident light onto the diffuser. Therefore, it would have been obvious to have the diffuser in the illuminator device for an optical imaging processing system and the method of modifying the coherence of a beam of radiation from a source of Shalapenok et al., be a holographic diffuser and the means for translating the surface of the diffuser doing so linearly in two dimensions with the proviso that the surface of the diffuser is not rotated, as taught by Jannson et al. and Stanton, for the purpose of 1) providing a larger optical path length of interaction between the incident light and the

diffuser, while increasing transmission efficiency and beam shaping capability, and 2) reduce the speckle cause by the coherence of the light incident on the diffuser, thus producing more uniform illumination conditions.

11. Claims 2-3, 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shalapenok et al. in view of Jansson et al. and Stanton as applied to Claims 1 and 11 above, and further in view of Bos (U.S. Patent No. 5825448), of record.

Shalapenok et al. in view of Jansson et al. and Stanton discloses the invention as set forth above, except for the coherent or partially coherent radiation being diffracted by the surface of the holographic element to generate diffracted radiation containing diffracted orders of radiation and a zero order of radiation and the illuminator further comprising filtering means to block all but the +1 or the -1 order radiation from reaching the condenser optic. However, Bos et al. teaches a reflective imaging projection system (See Figure 8) wherein a controllable diffractive optical element, which may be lithographically, holographically or interferometrically generated (See 64 in Figure 8; Abstract), generates diffracted radiation containing diffracted orders of radiation from a source (See 52 in Figure 8), and spatial filters or louvers (See 22 in Figure 6) placed near the diffractive optical element may be used to filter out any particular diffraction order or sets of diffraction orders generated by the diffractive optical element (See col. 1, lines 38-54; col. 3, lines 12-39; col. 17, line 62-col. 18, line 14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the coherent or partially coherent radiation be diffracted by the surface of the holographic element to generate diffracted radiation containing diffracted orders of radiation and a

zero order of radiation and the illuminator further comprise filtering means to block all but the +1 or the -1 order radiation from reaching the condenser optic, as taught by Bos et al., in the illuminator device and method of Shalapenok et al. in view of Jannson et al. and Stanton, for the purpose of improving the transmission efficiency of the optical system.

12. Claims 8-9, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shalapenok et al. in view of Jannson et al. and Stanton as applied to Claims 1 and 11 above, and further in view of Makabe et al. (U.S. Patent No. 4845551), of record.

Shalapenok et al. in view of Jannson et al. and Stanton discloses the invention as set forth above in Claims 1 and 11, except for the condenser optic being a single, spherically reflective element. However, Makabe et al. teaches a soft x-ray lithographic system (See Figure 1) wherein the condenser optic (See 2 in Figure 1) is a single, spherically reflective element (See col. 3, lines 8-17). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the condenser optic be a single, spherically reflective element, such as a spherically concave reflector as taught by Makabe et al., in the illuminator device for an optical imaging processing system and a method of modifying the coherence of a beam of radiation from a source as disclosed by Shalapenok et al. in view of Jannson et al. and Stanton. One would have been motivated to do this to reduce the number of optical elements in the system, thus increasing the overall efficiency and light throughput (this factor being particularly important since source wavelengths of 1-100 nm are being considered and most optical materials are highly absorbing at these wavelengths).

13. Claims 4-5, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shalapenok et al. in view of Jannson et al. and Stanton as applied to Claims 1 and 11 above, and further in view of Kathman et al. (U.S. Patent No. 6118559), of record.

Shalapenok et al. in view of Jannson et al. and Stanton discloses the invention as set forth above in Claims 1 and 11, except for the holographic diffuser being a binary phase or amplitude device. However, Kathman et al. teaches holographic diffractive optical diffusers having binary phase and/or amplitudes (See for example Figures 1 or 2; col. 1, lines 23-62) for applications requiring a large band of design wavelengths and very low zero order efficiency. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the holographic diffuser be a binary phase or amplitude device, as taught by Kathman et al., in the illuminator device for an optical imaging processing system and a method of modifying the coherence of a beam of radiation from a source as disclosed by Shalapenok et al. in view of Jannson et al. and Stanton. One would have been motivated to do this to reduce or eliminate the zero order diffraction for the designed source wavelength (i.e. the synchrotron emission wavelength).

14. Claims 6-7, 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shalapenok et al. in view of Jannson et al. and Stanton as applied to Claims 1 and 11 above, and further in view of Hamano et al. (U.S. Patent Application No. US2002/0001109 A1), of record.

Shalapenok et al. in view of Jannson et al. and Stanton discloses the invention as set forth above in Claims 1 and 11, except for the holographic diffuser being a blazed phase

device quantized to between 3 and 8 levels. However, Hamano et al. teaches a holographic diffuser that is blazed and quantized between 3 and 8 levels (See for example Figures 17, 18, 23a, 23b, 24a-e; Paragraphs 0176-0184, 0223-0235) for applications in display and imaging systems. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the holographic diffuser be a blazed phase device quantized to between 3 and 8 levels, as taught by Hamano et al., in the illuminator device for an optical imaging processing system and a method of modifying the coherence of a beam of radiation from a source as disclosed by Shalapenok et al. in view of Jansson et al. and Stanton. One would have been motivated to do this to adjust the wavelength of maximum diffraction efficiency, as well as maximize the diffraction efficiency of the diffuser.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

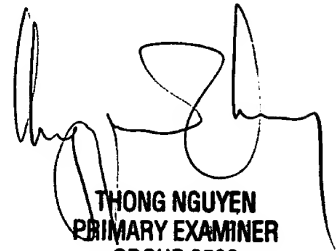
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
5/3/04



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